

WHAT IS CLAIMED IS:

1. A high efficiency amplifier including input signal dividing means for splitting an input signal; a first amplifier for amplifying a first input signal fed from said input signal dividing means; a second amplifier for amplifying, when power of a second input signal fed from said input signal dividing means is greater than specified power, the second input signal; and a combining circuit for combining an output signal of said first amplifier and an output signal of said second amplifier, said high efficiency amplifier comprising before said second amplifier: a distortion compensation circuit for compensating for nonlinear distortion of said second amplifier.

15 2. The high efficiency amplifier according to claim 1, further comprising a distortion compensation circuit for compensating for nonlinear distortion of said first amplifier before said first amplifier.

20 3. A high efficiency amplifier including input signal dividing means for splitting an input signal; a first amplifier for amplifying a first input signal fed from said input signal dividing means; a second amplifier for amplifying, when power of a second input signal fed from said input signal dividing means is greater than specified power, the second input signal; and a combining circuit for combining an output signal of said first amplifier and an output signal of said second amplifier, said high efficiency amplifier comprising before said first amplifier: a level limiting circuit for limiting, when amplitude of the first input signal fed from said input signal dividing means is greater than 25 a specified level, the amplitude of the first input signal to 30

less than the specified level, and for supplying to said first amplifier.

4. The high efficiency amplifier according to claim 3, wherein
5 said level limiting circuit is a limiter circuit.

5. The high efficiency amplifier according to claim 3, wherein
said level limiting circuit is a driver amplifier having a
saturation characteristic.

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6. The high efficiency amplifier according to claim 3, wherein
said level limiting circuit is a waveform shaping circuit.

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7. The high efficiency amplifier according to claim 6, further
comprising before said second amplifier a waveform shaping
circuit that suppresses output of a signal when amplitude of
the second input signal fed from said input signal dividing means
is less than a specified level.

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8. The high efficiency amplifier according to claim 7, further
comprising a first distortion compensation circuit for
compensating for nonlinear distortion of said first amplifier
before said first amplifier; and a second distortion compensation
circuit for compensating for nonlinear distortion of said second
25 amplifier before said second amplifier.

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9. The high efficiency amplifier according to claim 8, further
comprising a first adaptive control circuit for varying
parameters of said first distortion compensation circuit in
response to the output signal of said first amplifier; and a

second adaptive control circuit for varying parameters of said second distortion compensation circuit in response to the output signal of said second amplifier.

5 10. A high efficiency amplifier including input signal dividing means for splitting an input signal; a first amplifier for amplifying a first input signal fed from said input signal dividing means; a second amplifier for amplifying a second input signal fed from said input signal dividing means; and a combining circuit
10 for combining an output signal of said first amplifier and an output signal of said second amplifier, said high efficiency amplifier comprising: a first waveform shaping circuit before said first amplifier, said first waveform shaping circuit limiting, when amplitude of the first input signal fed from said
15 input signal dividing means is greater than a specified level, the amplitude of the first input signal to less than a specified level, and supplying to said first amplifier; and a second waveform shaping circuit before said second amplifier, said second waveform shaping circuit suppressing output of a signal when
20 amplitude of the second input signal fed from said input signal dividing means is less than a specified level.

11. The high efficiency amplifier according to claim 10, wherein said first waveform shaping circuit has a characteristic of gradually limiting the amplitude of the input signal as the amplitude of the input signal approaches the specified level.
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12. The high efficiency amplifier according to claim 1, wherein said distortion compensation circuit is placed before said input signal dividing means rather than before said second amplifier.
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13. The high efficiency amplifier according to claim 12, further comprising an adaptive control circuit for varying parameters of said distortion compensation circuit in response to the
5 combined signal output from said combining circuit.